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Memorandum

Date: **April 16, 2012**

To: **LaDonna Turner, Site Assessment Manager**
Response and Prevention Branch
U.S. Environmental Protection Agency, Region 6

From: **Phyllis Bustamante, Acting Manager**
Superfund Oversight Section
New Mexico Environment Department
Ground Water Quality Bureau,

Subject: **Pre-CERCLIS Screening Assessment of St. Anthony Mine, New Mexico: No Further Action Under CERLCA Recommended**

Site name	St. Anthony	**Alias**	**Street Address**	NA	
City	NA	**State**	New Mexico	**Zip code**	NA
County	Cibola County				
Latitude	35°09'48.93" N	**Longitude**	107°18'03.00" W		

Site physical description:

The St. Anthony Mine is primarily located in Section 30, T11N, R5W, in the Laguna Mining Sub-District of the Grants Mining District in Cibola County, approximately 4.6 miles southeast of the village of Seboyeta, in the Cebolleta Land Grant (CLG) (Figure 1). The St. Anthony Mine is an inactive open pit and underground mine that was operated by the United Nuclear Corporation (UNC) which produced uranium from 1975 to 1981 (Ref. 1). Limited closure activities of the site occurred in 1984 and 1985 and included the plugging of the main shaft and vent holes, the removal of equipment and buildings, and trash cleanup and fence repair. Currently approximately 450 acres of disturbed surface area remain unreclaimed at the mine site. In 2002, the New Mexico Court of Appeals adjudicated the St. Anthony Mine to be an existing mine subject to the New Mexico Mining Act (Ref. 2).

Site identification:

The St. Anthony Mine is one of 19 legacy uranium mine sites identified within the Laguna Mining Sub-District within the Grants Mining District (Ref. 1). The St. Anthony Mine is located on the CLG approximately one mile from the JJ No. 1 underground mine and the Jackpile open pit

uranium mine.

Site Summary:

The St. Anthony Mine was an open pit and underground mine operated by UNC from 1975 through 1981 (Figure 2). The excavation of a small pit was initiated in 1975 and excavation of a larger pit began in 1976. Shaft construction for the underground workings began in 1977 (Ref. 3). The St. Anthony Mine produced 78,722 tons of ore and 320,942 pounds of uranium oxide (Ref. 1). UNC operated the St. Anthony Mine pursuant to a mineral lease with the Cebolleta Land Grant, the current surface and mineral rights owner. This lease was obtained in 1964 and was surrendered by a Release of Mineral Rights dated 1988 (Ref. 2). The disturbed surface area at the mine site includes: underground workings consisting of one shaft and several vent shafts that are sealed at the surface; two open pits, one containing ponded water; seven large piles of non-economical mine materials and numerous smaller piles of non-economical mine materials; an ore crusher stockpile area; and three topsoil piles (Figure 2) (Ref. 3).

In 1995, the New Mexico Environment Department (NMED) completed a Preliminary Assessment for the St. Anthony Mine Site under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). This report identified the potential release of CERCLA hazardous substances (metals and radionuclides) to the ground water and surface water pathways. The Preliminary Assessment identified NMED sampling data from both the pit water and the ground water from the underground workings in 1977, 1978, and 1979. Results of all samples collected exceeded both the EPA Maximum Contaminant Levels (MCLs) and the New Mexico Water Quality Control Commission (NMWQCC) Ground Water Standards for metals and radionuclides (Ref.4) (Table 1). In 1996, EPA notified NMED that further site characterization was not warranted under Superfund regulations (Ref. 5).

Following passage of the New Mexico Mining Act in 1993, the New Mexico Energy Minerals and Natural Resources Department (NMEMNRD) issued a Notice of Violation in 1995 to UNC based on UNC's failure as an existing mine operation under the New Mexico Mining Act [19.10.5.500NMAC] to submit a timely Site Assessment and Permit Application, including a Closeout Plan for the cleanup and reclamation of the St. Anthony Mine Site. In 2000, UNC successfully argued in District Court that uranium mines were not covered under the New Mexico Mining Act and the Notice of Violation was dismissed. In 2002, NMEMNRD petitioned the Court of Appeals of New Mexico which reversed the District Court decision. In 2003, UNC submitted a Site Assessment and Permit Application to NMEMNRD. In 2006, UNC submitted a Closeout Plan to NMEMNRD for the cleanup and reclamation of the St. Anthony Mine Site (Ref 6).

Pursuant to the New Mexico Mining Act [19.10.5.506 NMAC], NMED reviews Closeout Plans to insure the plan as written is protective of applicable standards for air, surface water and ground water protection enforced by the NMED. Once the Closeout Plan is developed in a manner that is protective of ground and surface water quality, and air quality, NMED issues a written determination to NMEMNRD. Pursuant to the New Mexico Mining Act a reclamation plan for an existing mine cannot be approved without a written determination from NMED stating that the Permit/Closeout Plan has demonstrated that the activities to be permitted or authorized will be expected to achieve compliance with all applicable environmental standards if carried out as described in the closeout plan.

In addition to the determination requirement for Closeout Plan approval, NMED notified UNC in 2002 that as the "responsible person" for the St. Anthony Mine Site they were required to submit a Stage 1 abatement plan pursuant to the NMWQCC Regulations [20.6.2.4000NMAC]. This was based on water quality sampling results from 1977, 1978, 1979, 1985 and 2000 that indicated

that standards set forth in NMWQCC Regulation 20.6.2.4103 had been exceeded. Following approval of the Stage 1 Abatement Plan, NMED received a Stage 2 Abatement Plan Evaluation Criteria Proposal from UNC in 2008 that will be used to select an abatement alternative. Closeout and abatement activities will begin at the St. Anthony Mine when an abatement alternative is chosen (Ref. 7).

Targets:

There are four communities within approximately five miles of the St. Anthony Mine site. These communities include Paguate, Moquino, Seboyeta, and Bibo. Moquino is the closest community approximately three and a half miles to the west. Paguate is approximately four miles west/southwest on the Laguna Indian Reservation and is the largest of the communities with a population of 421 according to the 2010 United States Census (Ref. 8).

The Moquino Water System (31 water users) and Paguate Water System (1,200 water users) provide drinking water for these communities and are within four miles of the St. Anthony Mine Site. The Bibo Mutual Domestic Water Association (263 water users) and Seboyeta Water System (290 water users) are within five miles of the St. Anthony Mine site. There are an indeterminable number of individuals and families living in rural areas on CLG and Laguna Pueblo property that may not be included in the population totals listed (Ref. 9).

Site ownership and Potential Responsible Parties:

The UNC was formed in 1961 as a joint venture between three existing companies; Olin Mathieson Corporation, Mallinckrodt Corporation of America, and Nuclear Development Corporation of America. Initially, Olin became majority stockholder of UNC. In 1962, UNC merged with Sabre-Pinon Corporation of Santa Fe, New Mexico. Sabre-Pinon held a majority interest in uranium mines and mills in the Ambrosia Lake area and a 65 percent interest in Homestake, New Mexico Partners. In 1968, Olin Mathieson sold its controlling interest in UNC (Ref. 10). In 1997, UNC became a wholly-owned, indirect subsidiary of the General Electric Company (Ref. 11).

File review:

Files and/or documents that were reviewed for this assessment are listed below in the reference section.

Site reconnaissance:

NMED has not conducted a site reconnaissance for this Pre-CERCLIS Screen.

Recommendation:

Data collected from the St. Anthony Mine has shown a release of CERCLA hazardous substances to ground and surface waters. On-going remedial activities at the St. Anthony Mine are being conducted by UNC under state oversight in accordance with NMWQCC regulations under an Abatement Plan. UNC is required to investigate and abate radiological and metal contamination for the impacts to the ground water system from the St. Anthony Mine.

NMED recommends that no further action is required at the St. Anthony Mine at this time. SOS may revisit this recommendation should additional information become available that indicates that an imminent threat to human health or the environment exists such that further action under

CERCLA is warranted. NMED SOS also proposes to periodically review new data as it becomes available and incorporate it into the ground water conceptual model for the Grants Mining District. A generalized investigation of potential ground water impacts from former uranium mines within the Grants Mining District, including the area of the St. Anthony Mine, is recommended as part of regional ground water quality characterization.

Table 1. Water Analytical Results. NMEID Uranium Mine and Mill Study, St Anthony Mine, 1977-1979.						
Sample	Total Dissolved Solids mg/L	Sulfate mg/L	Aluminum mg/L	Radium 226+228 pCi/L	Uranium mg/L	Gross Alpha (α) pCi/L
Pit Surge Pond, 1977	1,378	2,151	---	180	2.5	---
Pit Holding Pond, 1978	2,493	2,083	---	90	5.5	2,100
Underground Mine Pond, 1978	1,272	530	---	40	1.0	4,100
Underground Mine Pond, 1979	887	274	16.0	450	5.4	5,100
Regulatory Standards (mg/L)						
WQCC	1,000	600	5.0	30	0.03	---
MCL	500	250	0.05-0.2	5	0.03	15

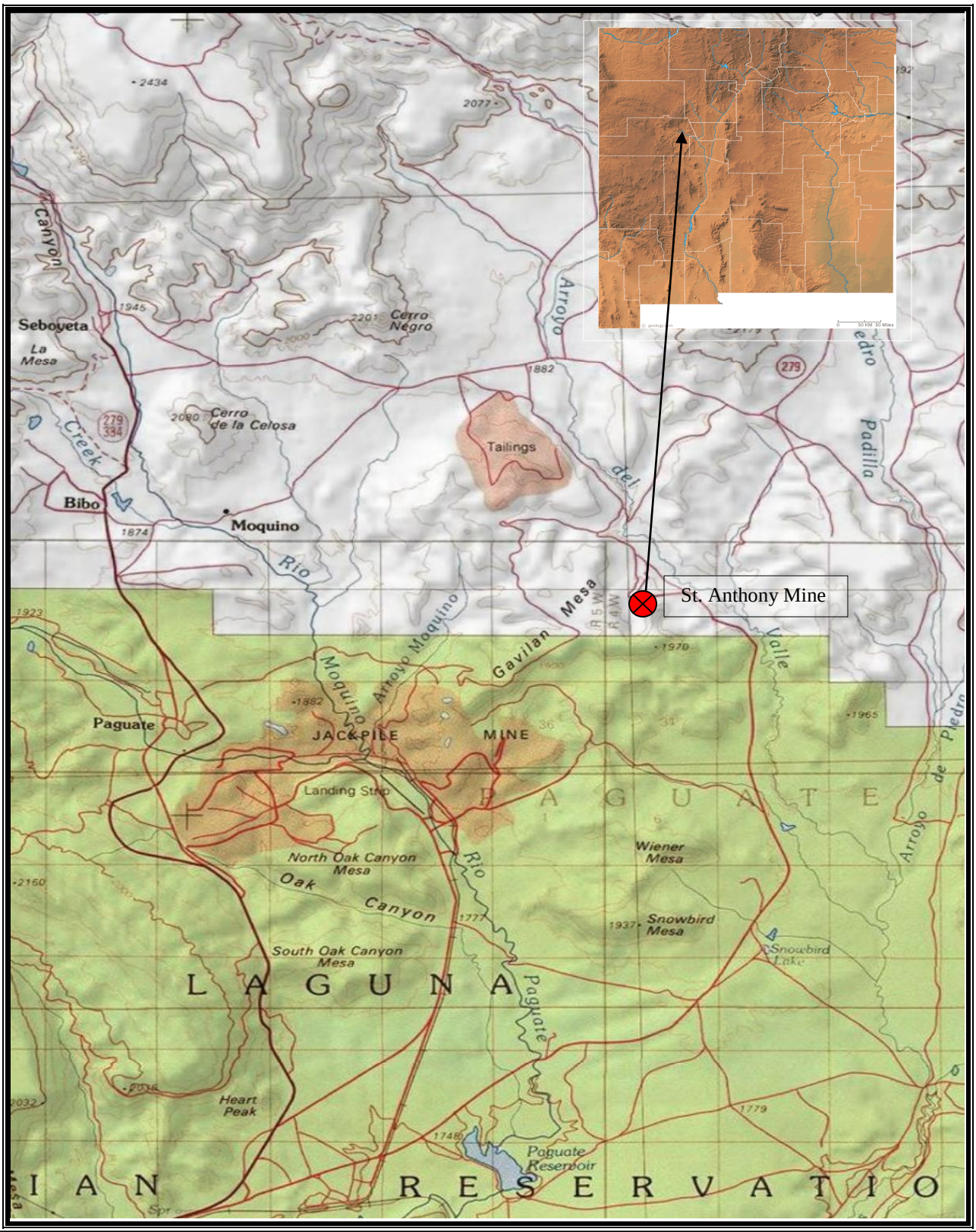

Figure 1. St. Anthony Mine Location

Figure 2. St. Anthony Mine Site

References:

1 New Mexico Energy Minerals and Natural Resources Department, 2007, Abandoned and inactive uranium mines in New Mexico database, Mining and Minerals Division.

2 United Nuclear Corporation, 2003, St. Anthony Mine Site Assessment, Prepared by MWH for UNC Existing Mine Permit Application.

3 New Mexico Environment Department, 1995, St. Anthony Mine Site Preliminary Assessment, EPA ID No. NM0001225168.

4 Court of Appeals of New Mexico, 2002, NMEMNRD vs United Nuclear Corporation, Docket No. 21,288,21,290.

5 United States Environmental Protection Agency, 1996, Letter to NMED, No Further Response Action Planned, St. Anthony Mine Site, EPA ID No. NM0001225168.

6 United Nuclear Corporation, 2006, St. Anthony Mine Site Closeout Plan, Prepared by MWH for UNC. Requirement of Existing Mine Permit.

7 New Mexico Environment Department, 2002, Letter to UNC, Abatement Plan Required at St. Anthony Mine Site.

8 United States Commerce Department, 2010, US Census, New Mexico State and County Quick Facts, Census Designated Places.

9 New Mexico Environment Department, 2010, Drinking Water Bureau, Water System Facilities.

10 Harvard Business School , 1968, United Nuclear Corporation List of Deals, Lehman Brothers Collection, Baker School Library Historical Collection.

11 General Electric, 2007, Church Rock Financial Surety, Source Materials License No. SUA-1475, Letter to NRC.